

Amendment to the Claims:

1. (Currently Amended) A method of tomographic imaging, and particularly a CT or MR method, for repetitively producing diagnostic slice images of a part of a patient's body, ~~having the following method steps comprising:~~

a) making ~~[[of]]~~ at least first and second current reference slice
5 images of the part of the body, the first and second slice current reference images
being in first and second reference image planes having first and second positions and
first and second orientations that are differently oriented by a preset angular offset;

b) ~~determination of determining~~ a geometrical transformation by
which the first and second positions and orientations of the current reference slice
10 images are brought into agreement with positions and orientations of at least first and
second earlier reference slice images of the part of the body, the first and second
earlier reference slice images being in first and second image planes having first and
second positions and first and second orientations that are differently oriented by the
preset angular offset,

c) ~~calculation of calculating~~ current imaging parameters by
transforming earlier imaging parameters ~~by means of with~~ the geometrical
15 ~~transformation (determined in step b),~~

d) making of a series of current diagnostic slice image, ~~the~~
position images, positions and orientations in three dimensions of ~~[[the]]~~ image planes
20 of the series of current diagnostic slice images being determined by the calculated
current imaging parameters (calculated in step c), the position and orientation of the
current diagnostic slice images being in agreement with positions and orientations in
three dimensions of corresponding slice images of a series of prior diagnostic slice
images of the part of the patient's body wherein there are made in step a) of the
25 method at least two current reference slice images whose image planes are preset in
such a way that their relative positions and orientations in three dimensions agree with
the relative positions and orientations in three dimensions of the earlier reference slice
images, and in that the geometrical transformation (is determined in step b) in such a
way that, by it, all the current reference slice images are brought into agreement with
30 the corresponding earlier reference slice images simultaneously.

2. (Currently Amended) The method as claimed in claim 1, wherein determining the geometrical transformation ~~(is determined in step b)~~ includes:

identifying reference points in the current reference slice images that
5 agree with corresponding reference points in the earlier reference slice images.

3. (Currently Amended) The method as claimed in claim 1, wherein the geometrical transformation ~~(determined in step b) of the method is~~ includes a rigid or an affine transformation that is defined by a set of transformation parameters, the set of transformation parameters being determined automatically by
5 ~~means of a~~ suitable algorithm, optimizing a measure of similarity that represents the similarity of the current reference slice images to the corresponding earlier ones.

4. (Currently Amended) The method as claimed in claim 1, wherein ~~a plurality of reference~~ the earlier reference slice images include at least two parallel slice images ~~are parallel and are made in each of [[a]] head-foot, anterior-posterior and right-left directions, the image resolution being higher in two of the~~
5 ~~slice image directions that in a third of the slice image directions.~~

5. (Currently Amended) A computer-readable medium carrying a computer program which controls a computer to perform a method, which automatically determines imaging parameters by which a position and orientation in three dimensions of an image plane of a diagnostic slice image are determined, the
5 method comprising:

a) receiving at least two current reference slice images which are perpendicular to each other and at least two earlier reference slice images which are perpendicular to each other,

b) determining a geometrical transformation by which the at
10 least two current reference slice images are simultaneously brought into alignment with the at least two earlier reference slice images,

c) calculating current imaging parameters by transforming earlier imaging parameters by the geometrical transformation, and

d) controlling an imager using the current imaging parameters to
15 generate a series of parallel current diagnostic images.

6. (Currently Amended) A tomographic imaging system
comprising:

an image-making means ~~that make for making~~ diagnostic slice images;
a computer that operates the image-making means and calculates
5 imaging parameters that determine particular positions and orientations in three
dimensions of image planes of diagnostic slice images made by the image-making
means, the computer being programmed to perform the steps of:

receiving at least two earlier reference slice images
having a first position and non-parallel orientation relative to each
10 other, ~~the~~ which-at least two earlier reference images ~~[[were]]~~ being
made using earlier imaging parameters;

controlling the image-making means to make at least
two current reference slice images which have the first position and
said non-parallel orientation relative to each other;

15 calculating a geometric transform that transforms both
~~of the~~ at least two current reference images ~~and both of~~ into alignment
with the at least two earlier reference images ~~into alignment with each~~
other;

operating on the earlier imaging parameters with the
20 calculated geometric transform to generate current imaging
parameters;

controlling the image-making means to generate a
plurality of parallel current diagnostic slice images using the current
imaging parameters.

7. (Currently Amended) The computer-readable medium as claimed in ~~claim 6~~ claim 5, wherein determining the geometrical transform further includes:

with a computer algorithm, maximizing a similarity measure that
5 represents a similarity between the current reference slice images and the earlier reference slice images.

8. (Currently Amended) The tomographic imaging system as claimed in claim 6, wherein

the at least two earlier reference slice images ~~include at least two earlier reference slice images are~~ oriented in parallel along each of two orthogonal
5 directions to each other, and

the at least two current reference slice images ~~include at least two current reference slice images are~~ oriented in parallel along each of two orthogonal
directions to each other.

9. (Currently Amended) The tomographic imaging system as claimed in claim 8, wherein ~~a resolution of the earlier and current reference slice images are oriented along one of the two orthogonal of foot-head, anterior-posterior, and left-right directions is different from a resolution of the earlier and current reference slice images oriented along another of the two orthogonal directions.~~
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10. (Currently Amended) An imaging system for the production of diagnostic slice images of a patient, the system comprising:

an imaging unit which makes at least two current reference slice images of the patient, the current reference slice images being preset in such a way
5 that ~~their relative positions and orientations in three dimensions coincide with the relative positions and orientations in three dimensions of earlier reference slice images of the patient oriented along at least two of head-foot, anterior-posterior, and left-right directions;~~

a transform unit ~~configured to determine that determines~~ a geometrical
10 transformation which aligns the current reference slice images and ~~[[the]]~~ at least two
earlier reference slice images that are oriented along the at least two of the head-foot,
anterior-posterior, and left-right directions;

a computer ~~configured-programmed~~ to automatically calculate current
imaging parameters by transforming earlier imaging parameters by the geometrical
15 transformation and to operate the imaging unit using the current imaging parameters
to set a position and orientation of an image plane in three dimensions and to generate
a plurality of diagnostic slice images oriented in ~~[[the]]~~ parallel image planes.

11. (Currently Amended) The system as claimed in claim 10,
wherein the geometrical transformation is one of a rigid and an affine transformation
defined by a set of transformation parameters, the set of transformation parameters
being determined automatically by ~~a suitable an~~ a suitable an algorithm which optimizes a measure
5 that represents a similarity of the current reference slice images to ~~[[the]]~~
corresponding earlier reference slice images.

12. (Currently Amended) The system as claimed in claim 10,
wherein the earlier and current reference slice images each include at least two
reference slice images oriented parallel to the parallel image planes and at least two
reference slice images oriented perpendicular to the parallel image planes.

13. (Previously Presented) The system as claimed in claim 12,
wherein the earlier reference slice images and the current reference slice images each
include at least two reference slice images oriented in a head-foot direction, an
anterior-posterior direction, and a right-left direction.

14. (Cancelled)

15. (New) The method as claimed in claim 1, wherein the
current reference slice images are orthogonal to each other and the earlier reference
slice images are orthogonal to each other.